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EXAMINER

PAYNE, DAVID C

ART UNIT	PAPER NUMBER
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2633

DATE MAILED: 06/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/819,527

Applicant(s)

FOLTZER, LAWRENCE E.

Examiner

David C. Payne

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 2-7 and 9-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-7 and 9-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 14 and 16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.
3. In claims 14 and 16 applicant has claimed “wherein each of the plurality of optical transmitters is assigned an **up to** [emphasis added] 10 nanosecond time slot, and wherein each bit of the bit interleaved optical data stream is transmitted via an **up to** [emphasis added] 2.5 ns pulse over the optical network.” The specification does not provide support for this claim.

Rather the specification (p.7 lines 6-8) disclosed, “... each transmitter may be assigned a 10 nano second (ns) time slot to transmit one bit of data. The bit may be transmitted by sending a 2.5 ns pulse onto the network.”

Applicant has claimed a range rather than the precise amounts as stated in the specification.

As such, the claim implies that time slots of length other than 10 nanoseconds and pulses other than 2.5 ns can be transmitted over the network, for which no support has been given in

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the specification.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 14 and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. The term "up to" in claims 14 and 16 is a relative term that renders the claim indefinite. The term "up to" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably appraised of the scope of the invention. The term implies that any value below a 10 nanoseconds time slot and a 2.5 ns pulse can be transmitted on the optical line. Does this mean that a 0 nanosecond time slot and 0 2.5 ns pulse can be transmitted, or even yet a .001 nanosecond time slot or a .0025 ns pulse is acceptable? No lower limit has been specified. It is doubtful that this can be properly construed as the applicant's invention.

7. Claims 2-7 and 9-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. Where applicant acts as his or her own lexicographer to specifically define a term of a claim contrary to its ordinary meaning, the written description must clearly redefine the claim term and set forth the uncommon definition so as to put one reasonably skilled in the art on notice that the applicant intended to so redefine that claim term. *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed. Cir. 1999). The term “PON splitter” in claims 2, 6, 9 and 13 is used by the claims to mean “sharing the time of a common propagation medium, such as an optical fiber to provide for two or more channels” (Fiber Optics Standard Dictionary, 3<sup>rd</sup> Ed.), while the accepted meaning is “a device that divides a beam, such as a lightbeam, into two or more separate beams with a total power that is less than or equal to the original beam,” (Fiber Optics Standard Dictionary, 3<sup>rd</sup> Ed.). The term is indefinite because the specification does not clearly redefine the term.

#### ***Response to Arguments***

1. Applicant's arguments filed 22 March 2004 have been fully considered but they are not persuasive.

It appears that the component, 120 of Figure 1, labeled as a Passive Optical Network Splitter, operates as a **bit multiplexer** and not as a splitter. From a reading of the specification and the claims, the traffic direction is from the transmitters (130 of Figure 1) to the PON (120 of Figure 1) to the headend (110 of Figure 1). This distinction appears to be critical to the applicant's claim of patentability.

Ironically, the applicant's assertion “*Although Darcie indicates that bit interleaving*

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*techniques may be used, however, it is respectfully submitted that Darcie fails to provide sufficient detailed information to enable one with ordinary skill in the art, based on the teachings of Darcie, to implement such techniques,”* highlights the applicant’s insufficient detail of how bit multiplexing is practiced. Splitters are commonly understood in the art as devices that tap off a portion of a signal and distribute that same signal to multiple points. Applicant has used the term splitter to indicate the function of bit multiplexing. Furthermore, there is not guidance in the specification that the splitter in Figure 1 has a dual function of combining and splitting and there is certainly no detail in the specification or drawings as to how bit interleaving is practiced. Therefore, the Examiner is forced to conclude either that what is called a splitter, functions as a multiplexer/router as in Darcie or either that applicant has not provided sufficient detail for enablement in the specification.

2. Regarding the Dowd reference and that the combination Dowd, Darcie and Quayle lack a reasonable expectation of success. Applicant has not substantiated this claim. Furthermore, Dowd disclosed the benefits of VCSELs as discussed below, which is sufficient motivation to use in the Darcie system.

***Claim Rejections - 35 USC § 103***

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3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2-4, 6, 9-11, 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Darcie US 5,559,624 (Darcie).

Regarding claims 2, 6, 9 and 13 Darcie disclosed (as understood based on the 112 2<sup>nd</sup> rejection above)

establishing a plurality of transmission time slots, each time slot corresponding to one of a plurality of optical transmitters coupled to a head end (Figure 12 #980) via a multiplexer (Figure 12 #990),

forming a bit interleaved (e.g., col./line: 4/55-65) optical data stream at the multiplexer (Figure 12 #990) based on a plurality of optical bits transmitted by the plurality of optical transmitters during a respective time slot associated with each of the optical transmitters; and transmitting the bit interleaved optical data stream from the multiplexer to the head end over an optical network. Darcie does not call the multiplexer/router (Figure 12 #990) a splitter, as does the applicant. However, it would have been obvious to one of ordinary skill in the art at the time of invention that multiplexers or combiners perform multiplexing and that splitters are used to divide lightbeams onto multiple paths.

Regarding claims 3 and 10, Darcie does not disclose

enabling each of the plurality of optical transmitters to transmit an optical bit during its

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corresponding time slot. However, it would have been obvious to one of ordinary skill in the art at the time of invention that the bit interleaving as discussed by Darcie requires each transmitter to only transmit during its appointed time-slot or otherwise simultaneous transmission during a bit period from more than one transmitter would produce incoherent data downstream.

Regarding claims 4 and 11, Darcie does not disclose adding an additional optical transmitter to the optical network.

It would have been obvious to one of ordinary skill in the art at the time of invention to add an additional transmitter for the benefit of transmitting more information such as in an additional television channel. Adding transmitters to an optical system is extremely well known in the art. Furthermore, increasing the number of duplicate parts is not considered patentable over the prior art.

Regarding claims 14 and 16, Darcie does not disclose a 10-nanosecond timeslot or a 2.5 ns pulse. However, it would have been obvious to one of ordinary skill in the art at the time of invention to claim timing consistent with the limits of high-speed transmission lasers. Furthermore, lacking any criticality the size of the timeslot and pulse is not considered patentable over the prior art.

5. Claims 2, 6, 9 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Darcie US 5,559,624 (Darcie) in view of Quayle US 6317234 B1 (Quayle).



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Regarding claims 2, 6, 9 and 13, Darcie disclosed (as understood based on the 112 2<sup>nd</sup> rejection above)

a head end (Figure 12 #980) but not coupled by a PON splitter to a plurality of transmitters.

Quayle disclosed a head-end (Figure 1, e.g., col./line: 5/60-67) coupled to a plurality of transmitter via a splitter (Figure 1 #4).

It would have been obvious to one of ordinary skill in the art at the time of invention couple the Darcie head-end in such a manner so that the signal from the head-end can be duplicated to each ONU without requiring separate transmitters to each ONU and all the associated circuitry for power and timing of separate transmitters at the headend.

6. Claims 5, 7 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Darcie US 5,559,624 (Darcie) in view of Dowd et al. US 6639931 B1 (Dowd).

Darcie does not disclose wherein at least one of the plurality of optical transmitters is a vertical cavity surface emitting laser.

Dowd disclosed (VCSELs) vertical cavity surface emitting lasers.

It would have been obvious to one of ordinary skill in the art at the time of invention to use VCSELs in the Darcie system for the benefit that VCSELs are particularly suited for producing a circular beam of light. Such a circular beam requires little or no further optical processing before application to devices as discussed by Dowd (see col./line: 1/30-40).

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7. Claims 5, 7 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Darcie US 5,559,624 (Darcie) and Quayle US 6317234 B1 (Quayle) as applied to claims 2, 6, and 9 above, and further in view of Dowd et al. US 6639931 B1 (Dowd).

The modified invention of Darcie and Quayle does not disclose wherein at least one of the plurality of optical transmitters is a vertical cavity surface emitting laser.

Dowd disclosed (VCSELs) vertical cavity surface emitting lasers.

It would have been obvious to one of ordinary skill in the art at the time of invention to use VCSELs in the modified Darcie/Quayle system for the benefit that VCSELs are particularly suited for producing a circular beam of light. Such a circular beam requires little or no further optical processing before application to devices as discussed by Dowd (see col./line: 1/30-40).

8. Claims 5,7, 12, 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Darcie US 5,559,624 (Darcie) in view of Gilliland et al. US 6,160,647 (Gilliland).

Regarding claims 5, 7 and 12,

Darcie does not disclose wherein at least one of the plurality of optical transmitters is a vertical cavity surface emitting laser.

Gilliland disclosed (VCSELs) vertical cavity surface emitting lasers (e.g., col./line: 2/50-55).

It would have been obvious to one of ordinary skill in the art at the time of invention to use VCSELs in the Darcie system for the benefit that VCSELs are particularly suited for producing a circular beam of light. Such a circular beam requires little or no further optical processing before application to devices as discussed by Dowd (see col./line: 1/30-40).

Regarding claims 15 and 17,

Darcie does not disclose wherein an average transmitting power of the bit interleaved optical data stream, while maintaining an average transmitting power of the bit interleaved optical data stream below a predetermined threshold that would cause a human eye damage.

Gilliland disclosed operating lasers within below a level that would damage eyes (e.g., col./line: 5/60-65). It would have been obvious to one of ordinary skill in the art at the time of invention to operate laser at such a level in order to ensure safe operating limits for humans.

### ***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David C. Payne whose telephone number is (703) 306-0004. The examiner can normally be reached on M-F, 7a-4p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (703) 305-4729. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dcp

  
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